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Abstract

I present a model of occupational choice where an agent decides whether to invest in a project that yields risky returns or a project that yields safe returns. An agent's utility is affected by the presence of an aspiration level which will only be satisfied if their final income is above the poverty line. I show that agents who are sufficiently above the poverty line will invest in the risky project and are able to aspire for success. An agent, however, who is just above the poverty line, may be so concerned about falling into poverty that they choose to invest in the safe project. These individuals aspire only to survive. Alternatively, if an agent is sufficiently below the poverty line, then they will invest in the risky project even if expected returns are lower than the safe project. These individuals have "nothing left to lose" and therefore aspire to escape. Two forms of poverty traps emerge from the resulting equilibria: one above the poverty line, and one below the poverty line. Finally, I offer empirical support for the model based on individual level survey data across a large number of countries.

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1 Introduction

What does it mean to have aspirations? We tend to think of an aspiration as above and beyond the position in life we are in now: to achieve great things, to become rich, to be a success. However, for some individuals, the aim is simply to survive, to maintain the status quo. This is born out of a fear that falling below their status quo is far worse than the current state they are in. For others, the fear of the status quo is already being felt, and will take any chance to escape their current situation. What aspirations have in common, however, is that they are formed in the present about the kind of future we want and the kind of future we hope will never happen. As a consequence, an aspiration is defined by the relative weights we attach to the overall probability of success and failure for a given objective.

The natural question one turns to is how we form our aspirations. One could argue that our aspirations are heterogenous and innate, shaped by our parents, or perhaps our culture. Despite our own, idiosyncratic aspirations, we may also share a common aspiration, to be free from poverty, for example. If this is the case, the effect of this common aspiration will differ depending on our own proximity to the poverty line. This will have important implications for wealth-enhancing investment decisions.

For example, starting a business can make individuals extremely rich or leave them desperately poor. Faced with the decision either to start a business or obtain a safer form of income, someone who is relatively wealthy can aspire for success, and may see this as a risk worth taking. Someone who is just above the poverty line, however, may view this business opportunity as a risk too far. This desire to maintain the status quo is born out of a fear that if their business failed they would fall into poverty. Someone who is already below the poverty line will have "nothing left to lose" and may view starting a business as the only way to escape poverty. This paper will show how individual aspirations aspirations to avoid poverty can result in poverty traps.

Within the theoretical poverty trap literature, many of the results are driven by moves away from the standard neoclassical paradigm, in order to create multiple equilibria and path-dependence (i.e., long-run outcomes are dependent on initial conditions). These include non-convexities in technologies, market incompleteness (often in the form of credit constraints) and imperfect functioning of institutions (see Azariadis 1996; 2005 for surveys).

More recently there has been a focus on the role of aspirations in the creation and persistence of poverty traps (see Ray, 2006 for an introduction). Aspirations may be conditioned by relative economic status, as in Moav and Neeman (2010) and Ray and Robson (2012), or by parents' aspirations

for their children's education, as in Mookherjee et al. (2010). For example, Genicot and Ray (2016) develop a model in which there is an endogenous relationship between economic outcomes and individual aspirations, and hence income and the distribution of income are jointly determined.

Dalton et al. (2016) show how a poverty trap can occur when effort affects final wealth. The optimal amount of effort chosen will be based on whether an individual believes they can meet their aspiration level. As a result, aspiration failure will be self-fulling. Blackburn and Chivers (2015) show how the effects of aspirationally-induced loss aversion can result in persistent inequality due to the fear or falling below a certain level of income. However, all of these models treat aspirations as unidirectional: either success (as in Genicot and Ray, 2016 and Dalton et al., 2016) or survival (as in Blackburn and Chivers, 2015).

The notion that aspirations of the poor may differ, can be traced back to Banerjee (2000), who suggests that there are two distinct and competing views of poverty: "poverty as desperation" and "poverty as vulnerability". Banerjee (2000) argues that, if we view poverty as a form of desperation, the poor would wish to invest in wealth-enhancing projects, but may be denied credit. However, if one views poverty as vulnerable individuals facing the possibility of falling further into poverty, then the poor may forgo investment in a risky project. This paper differs to Banerjee's (2000), as it shows how both these types of behaviours can stem from aspirations alone, without the need of appealing to non-convexities in technologies.

The approach of this paper is driven by recent advancements in decision theory - specifically, aspiration levels. Aspiration levels occur when individuals are faced with a risky prospect. The individual evaluates the project based on their weighted preferences of the overall probability of success or failure. What individuals deem to be a success or failure is judged with respect to some aspirational outcome (see Diecidue and Van de Ven, 2008).

Aspiration levels are similar to reference points that occur in loss-averse preferences developed by Kahneman and Tversky (1979) in their seminal work on prospect theory. Loss aversion is the notion that individuals have a stronger preference to avoid losses than to obtain gains, relative to a particular reference point. Although there is a subtle difference between aspiration levels and reference points, the two are linked (see Lopes and Oden, 1999, for a comparison). Aspiration levels are based on probabilities and view outcomes as final states. Conversely, reference points are a behavioural concept linked to changes in wealth. These features give rise to a discontinuity in the utility function for aspiration levels and a kinked utility function under loss aversion.

The presence of aspirational levels in risky projects has been found in

a number of experimental and empirical studies (see e.g., Holthausen 1981; Mezias 1988; Langer and Weber 2001; Mezias et al. 2002). There is also a growing literature examining aspirations in developing countries. Pasquier-Doumer and Brandon (2015) examine educational investment among indigenous and non-indigenous children in Peru. They find that although indigenous children have lower aspirations than non-indigenous children, this is mostly explained by the effects of socioeconomic status.

Aspirations have also been the subject of a number of randomised control trials (see Bogliancino and Gozález-Gallo, 2015, Macours and Vakis, 2009). Bernard et al. (2014) conducted an experiment in order to examine peer effects in the formation of aspirations in rural Ethiopia. The treatment group of individuals were invited to watch a documentary about successful entrepreneurs from similar communities. A first control group watched an entertainment programme, while a second control group were simply surveyed. They found that aspirations were higher among the treated, but unchanged amongst the control groups.

From a development perspective, these aspirational effects are important, as risky, wealth-enhancing investment decisions are key to understanding the creation and persistence of poverty traps.

The remainder of the paper is outlined as follows. In section 2, I examine the effect of aspirations on wealth-enhancing investment decisions in a stochastic overlapping generation model. In section 3, I test the implications of this model by using individual-level survey data across a large sample of countries and create a linear probability model in order to identify a common aspiration level among entrepreneurs. Finally, I offer a conclusion in section 4.

2 The Model

Consider a small, open economy with a unit population of two-period lived agents in an overlapping generations framework. Generations are connected through transfers of a productive technology such as human capital (as in Lucas, 1988), or stock of knowledge (as in Romer, 1986). In the first period of life, young agents choose to invest in a risky project or invest in a safe project with guaranteed returns. The risky project may be opportunity-driven (which yields higher returns on average than the safe project) or necessity driven (which yields lower returns on average than the safe option). In the final period of life, old agents consume the realised output based on their investment choices. Agents utility is governed by a common aspiration level in the form of Diecidue and Van de Ven (2008).

2.1 Preferences

Agents have identical preferences and derive utility from lifetime income such that $u_t = u(x_{t+1})$. Following Diecidue and Van de Ven (2008), agents have a common aspiration level in their utility function x^* such that their expected utility is given as $V_t = E(x_{t+1} - x^*) + \mu P(x_{t+1} \geq x^*) - \lambda P(x_{t+1} < x^*)$. The term $P(x_{t+1} < x^*)$, is the probability of failing to attain their aspiration, and $P(x_{t+1} \geq x^*)$, is the probability of achieving their aspiration. Whether one views an aspiration as a disutility of failure of being below x^*, or an added utility of success from being above x^*, is inconsequential to the model. The only requirement is that the combined weights of success and failure do not cancel each other out (where for $\mu = \lambda$). Consequently, I set $\mu = 0$ in order to simplify the model, and therefore assume agents face an added disutility based on the probability of failure to meet their aspiration level of income.[1]

Let x_{t+1} and x^* denote, the actual and aspiration levels of income of an agent, respectively. The expected payoff to each agent is given by

$$V_t = E(x_{t+1} - x^*) - \lambda P(x_{t+1} < x^*), \tag{1}$$

where $\lambda > 0$.

2.2 Technologies

There exists two types of risky projects that require a fixed amount of capital $k > 0$ on start-up: an "opportunity-driven" project, where $i_t = k_B$, and a "necessity driven" project, where $i_t = k_b$. If agents do not invest in a risky project, they can invest in a safe project which requires no capital investment, where $i_t = 0$. As agents are not endowed with any physical capital at the start of life, agents must borrow to start a business (as in Banerjee and Newman, 1993; Galor and Zeira, 1993). Credit markets, however, function perfectly, and hence capital is borrowed at the world rate of interest r.[2]

The formation of the next period's productive technology h_{t+1} will depend on a fraction β of last period's productive technology h_t, where $\beta \in (0; 1)$. An opportunity-driven entrepreneur's productive technology will increase by B from investment, whereas a necessity-driven entrepreneur will increase by b. An individual who does not start a business and persues the safe project will increase their productive technology by s. The hierarchy of investments

[1] It is trivial to show what happens when $\mu > 0$. Adding this to the model simply strengthens the effects of aspirations (see Blackburn and Chivers, 2015).

[2] Although credit markets function perfectly, I assume agents cannot borrow to self insure against any negative shocks. See Antunes et al. (2015) for a model in which entrepreneurs face a distorted credit market.

is given as $B > s > b$. The evolution of the productive technology will diverge depending on the investment decision of the agent such that

$$h_{t+1} = \begin{cases} \beta h_t + B & \text{if } i_t = k_B, \\ \beta h_t + s & \text{if } i_t = 0, \\ \beta h_t + b & \text{if } i_t = k_b. \end{cases} \tag{2}$$

Although next period's productive technology h_{t+1} is known, the next period's output y_{t+1} is uncertain for risky projects. This will be important for the agent's investment decision as output y_{t+1} is simply the agents income x_{t+1}. Output for both risky projects and the safe project is expressed as

$$y_{t+1} = \begin{cases} A(1+\alpha_{t+1})h_{t+1} & \text{if } i_t = k_B \text{ or } i_t = k_b, \\ Ah_{t+1} \text{ if } i_t = 0, \end{cases} \tag{3}$$

where total factor productivity A is a positive constant. The term α_{t+1} represents a technology shock and is designed to reflect the fact that the returns to entrepreneurship are comparatively risky compared to paid employment.[3]

The shock α_{t+1}, is uniformly distributed on the interval $(-a; a)$, with probability density function $f(\alpha_{t+1}) = \frac{1}{2a}(a < 1)$.[4] This implies that the expected value of this shock is zero $E[\alpha_{t+1}] = \int_{-a}^{a} \alpha_{t+1} f(\alpha_{t+1}) d\alpha_{t+1} = 0$, and that the variance (and therefore risk) of the shock, is determined by a which is given as $var\left(\alpha_{t+1}\right) = E\left[\left(\alpha_{t+1} - E\left(\alpha_{t+1}\right)\right)^2\right] = E(\alpha_{t+1}^2) = \int_{-a}^{a} \alpha_{t+1}^2 f(\alpha_{t+1}) d\alpha_{t+1} = \frac{a^2}{3}$.

2.3 Incomes

Using equations (2) and (3), and noting an old agent's output y_{t+1} is their income x_{t+1}, an agent can obtain the following:

$$x_{t+1} = \begin{cases} A(1+\alpha_{t+1})(\beta h_t + B) - (1+r)k & \text{if } i_t = k_B, \\ A(\beta h_t + s) \text{ if } i_t = 0, \\ A(1+\alpha_{t+1})(\beta h_t + b) - (1+r)k & \text{if } i_t = k_b. \end{cases} \tag{4}$$

[3] It is possible to rewrite this model with risk entering the productive technology rather than output. The subsequent analysis would be unchanged with the only difference being the transitional dynamics of the model.

[4] One could argue that the cost of the project, and level of risk, may vary between an opportunity-driven project and a necessity-driven project. However, I assume the cost of the project, and the level of risk, is the same for simplicity of exposition.

Correspondingly, the expected final income becomes

$$E\left[x_{t+1}\right] = \begin{cases} A(\beta h_t + B) - (1+r)k & \text{if } i_t = k_B, \\ A(\beta h_t + s) & \text{if } i_t = 0, \\ A(\beta h_t + b) - (1+r)k & \text{if } i_t = k_b. \end{cases} \tag{5}$$

The evolution of incomes captures a number of stylised facts about the entrepreneurial earnings distribution.[5] Although the returns to entrepreneurship are lower than paid employment on average, the returns to entrepreneurship have a much wider distribution (see Lin et al., 2000, Hamilton, 2000, and Herranz etl al. 2015). Furthermore, entrepreneurs tend to be drawn disproportionately from each end of the ability distribution and are remunerated accordingly (Åstebro et al., 2011).

I assume that on average the opportunity-driven, risky project yields a greater return that the safe project such that $B > s$. To make the analysis non-trivial, however, I assume that the presence of uncertainty (via α_{t+1}) in the production of the opportunity-driven project means that it is not for certain that the risky project will always guarantee a higher level of income than the safe project. I also assume that the necessity-driven project will on average be lower than the safe project such that $s > b$, but there is a possibility once production takes place that the necessity-driven project can yield a higher income. As a result of these two assumptions, the parameter restrictions $B(1-a) \leq s$ and $b(1+a) \geq s$ are needed. I now analyse the occupational choice facing individuals above and below the poverty line.

2.4 Non-poor Agents

A non-poor agent is defined as an individual who *can* be above the poverty line x^* if they invest in the safe project, such that $A(\beta h_t + s\,) \geq x^*$. The choice this agent faces will be whether to invest in the opportunity-driven project or the safe project. This is because both of these investments will always be preferable to the necessity-driven project, as the expected value of opportunity-driven project is always higher than a necessity-driven project, $B > b$. As individuals consume all output in the last period of life, one can simply substitute equation (5) into the utility function in equation (1). For agents that invest in the safe project their expected utility becomes

$$V_t|_{i_t=0} = A[\beta h_t + s] - x^*. \tag{6}$$

[5] With some further parameter restrictions one could trivially use a convex function that represents all entrepreneurial activities - returns start off smaller than the safe project and eventually eclipse them. However, for demonstrative purposes, I use the above with no loss of generality.

Notice that as non-poor agents are already above their aspiration level, investing in a safe project does not result in any disutility associated with failure.

By contrast, suppose that the decision to invest in the opportunity-driven project may, or may not, satisfy an individual's aspiration level (i.e., $A(1+\alpha_{t+1})(\beta h_t + B) - (1+r)k \geq x^*$), or $A(1+\alpha_{t+1})(\beta h_t + B) - (1+r)k < x^*$). It is now possible to define a critical value of the productivity shock $\widehat{\alpha}_{t+1}$ such that an individual would meet their aspiration, if $\alpha_{t+1} \geq \widehat{\alpha}_{t+1}$, or fail to meet their aspiration if, $\alpha_{t+1} < \widehat{\alpha}_{t+1}$. In order to determine $\widehat{\alpha}_{t+1}$ one must find the the level of α_{t+1} which satisfies the following equation

$$A(1+\widehat{\alpha}_{t+1})(\beta h_t + B) - (1+r)k_B = x^*. \tag{7}$$

Accordingly, the probability of failing to attain aspirations is $P(x_{t+1} < x^*) = P(x_{t+1} < \widehat{\alpha}_{t+1}) = \int_{-a}^{\widehat{\alpha}_{t+1}} f(\alpha_{t+1}) d\alpha_{t+1} = \frac{\widehat{\alpha}_{t+1}+\alpha}{2\alpha}$. By substituting this into equation (1), the expected utility of an individual that invests in the risky, opportunity-driven project is given as

$$V_t|_{i_t=k_B} = A\left(\beta h_t + B\right) - (1+r)k - \lambda\left(\frac{\widehat{\alpha}_{t+1}+a}{2a}\right). \tag{8}$$

The decision to invest in the opportunity-driven project rests on whether the opportunity-driven project yields higher utility than the safe project, where $V_t|_{i_t=k} > V_t|_{i_t=0}$. By using equations (6) and (8), this condition is given as

$$A\left(B-s\right) - (1+r)k \geq \lambda\left(\frac{\widehat{\alpha}_{t+1}+a}{2a}\right). \tag{9}$$

Rearranging the expression in equation (7) delivers

$$\widehat{\alpha}_{t+1} = \frac{(1+r)k + x^* - A(\beta h_t + B)}{A(\beta h_t + B)} \equiv \alpha(h_t), \tag{10}$$

where $\alpha_h(h_t) < 0$. Given the above, the condition for investment in the opportunity-driven project is expressed as $A(B-s) - (1+r)k \geq \lambda\left(\frac{\alpha(h_t)+a}{2a}\right)$. This condition is more likely to be satisfied the higher an agent's initial knowledge h_t, the lower the weight of aspirations λ, and the lower the level of uncertainty a.[6]

[6]The effect of a follows $\widehat{\alpha}_{t+1} < 0$ in (8). This is due to the fact that for a non-poor agent $A(\beta h_t + B) - (1+r)k - x^* > 0$ must hold. If this condition does not hold, then investment in the opportunity-driven project will never be chosen, as the expected income from this investment would be less than the aspiration level an agent. Or in other words, they would always choose to invest in the safe asset.

The condition which determines whether or not a non-poor agent invests in an opportunity-driven project is defined for any h_t, such that $h_t \geq \widehat{h}_B$, in

$$A\left(B-s\right)-(1+r)k \geq \lambda\left(\frac{\alpha\left(\widehat{h}_B\right)+a}{2a}\right). \tag{11}$$

2.5 Poor Agents

A poor agent is defined as an individual whose income *cannot* be above the poverty line x^* if they invest in the safe project, such that $A(\beta h_t + s\,) < x^*$. I assume, initially, that poor individuals do not have access to the opportunity-driven project. This is not a crucial assumption for the model but is implemented to highlight how aspirations will affect poor and non-poor agents differently. As mentioned earlier, one could replace both risky projects with a convex function of knowledge accumulation: returns to entrepreneurship start off smaller than the safe project and eventually outgrow them. Imposing the assumption that poor individuals do not have access to the opportunity-driven project is equivalent to imposing further parameter restrictions on a model with a convex function of knowledge accumulation. Nevertheless, I return to the consequences of relaxing this assumption in the discussion of equilibrium outcomes.

If a poor agent invests in the safe project, then the presence of the disutility of being below their aspiration level will always be felt. By using equations (5) and (1), the poor agent's expected utility when choosing the safe project becomes

$$V_t|_{i_t=0} = A[\beta h_t + s] - x^* - \lambda. \tag{12}$$

Although on average the necessity-driven project yields a lower return than the safe project, as $s > b$, this is not a certainty. If a poor agent chooses the necessity-driven project then there is a chance that the project may take them over the poverty line x^* (i.e., $A(1+\alpha_{t+1})(\beta h_t + b) - (1+r)k \geq x^*$), or $A(1+\alpha_{t+1})(\beta h_t + b) - (1+r)k < x^*$). Hence, it is possible to find a critical value of the productivity shock $\widehat{\alpha}_{t+1}$ that takes the individual's final income over the poverty line. The expected utility of the necessity-driven project is therefore given as

$$V_t|_{i_t=k_b} = A\left(\beta h_t + b\right) - x^* - (1+r)k - \lambda\left(\frac{\widehat{\alpha}_{t+1}+a}{2a}\right). \tag{13}$$

The occupational choice for the poor agent is determined by comparing the respective utilities of the necessity-driven project and the safe project. Substituting (13) and (12) in $V_t|_{i_t=k_b} \geq V_t|_{i_t=0}$, one obtains the expression

that would result in the agent having a higher utility under necessity-driven entrepreneurship than the safe project

$$\lambda\left(\frac{a-\widehat{\alpha}_{t+1}}{2a}\right) \geq A[s-b]+(1+r)k. \tag{14}$$

I therefore determine $\widehat{\alpha}_{t+1}$ in a similar manner to non-poor agents in (7) noting $\alpha_h(h_t) < 0$. The condition $\lambda\left(\frac{a-\alpha(h)}{2a}\right) \geq A[s-b]+(1+r)k$ is more likely to hold the higher the poor agent's initial level of knowledge h_t. As poor agents move closer towards their aspirational level, they are more likely to invest in a project that would see them escape poverty. As a result, this condition is more likely to be satisfied the greater the strength of aspirations λ and the greater the level of risk a.

If the poor agent chooses the safe project or fails to meet their aspiration under the necessity-driven project, they will still experience the negative utility of being below their aspiration. Accordingly the condition for investment the necessity-driven for a poor agent is defined for any h_t, such that $h_t \geq \widehat{h}_b$, in

$$\lambda\left(\frac{a-\left(\widehat{h}_b\right)}{2a}\right) \geq A[s-b]+(1+r)k. \tag{15}$$

2.6 Equilibrium Outcomes

There exists a critical value h_t which determines whether an individual can, or cannot, be above the poverty line x^*. This critical value determines whether the agent is non-poor $(A(\beta h_t + s\,) \geq x^*)$, or poor $(A(\beta h_t + s\,) < x^*)$, and is expressed as

$$\widehat{h}_{x^*} = \frac{x^* - sA}{A\beta}. \tag{16}$$

Using this result together with equations (11) and (15), it is possible to define the threshold levels of the initial productive technology $\widehat{h}_b$, $\widehat{h}_{x^*}$ and $\widehat{h}_B$. These threshold levels of the initial productive technology determine the long-run consequence of each generation's investment decisions. The evolution of this process for all initial levels of knowledge is described by

$$h_{t+1} = \begin{cases} \beta h_t + s & \text{if } h_t < \widehat{h}_b, \\ \beta h_t + b & \text{if } \widehat{h}_b \leq h_t < \widehat{h}_{x^*}, \\ \beta h_t + s & \text{if } \widehat{h}_{x^*} \leq h_t < \widehat{h}_B, \\ \beta h_t + B & \text{if } h_t \geq \widehat{h}_B. \end{cases} \tag{17}$$

Depending on the initial level of knowledge of the first generation h_t, the economy will converge to high, medium or low steady-state ($h_H^* = \frac{B}{1-\beta}$, $h_M^* = \frac{s}{1-\beta}$or $h_L^* = \frac{b}{1-\beta}$).[7] The dynamics of this process are shown in Figure 1.

[Figure 1 about here]

If an individual has an initial productive technology $h_t < \widehat{h}_b$, then they and their future generations will invest in the safe project. This occurs until the accumulation of knowledge over generations reaches $\widehat{h}_b$ where that particular generation will invest in a necessity-driven project. Even though on average this project will yield lower returns than the safe project, due to the presence of risk in the production function it is possible that some generations will reach their aspiration level and escape poverty. However, as agents only pass on knowledge to their future dynasties, any favourable productivity shock that allows a generation to escape poverty will only benefit that generation. In this model, knowledge determines future generation's productivity, not final income. Hence, dynasties whose initial productive technology is $h_t < \widehat{h}_{x^*}$, will converge to a low steady-state h_L^*, and always invest in necessity-driven projects.

Individuals with initial productive technology $h_t \geq \widehat{h}_{x^*}$ have the choice of investing in an opportunity-driven project that yields higher expected returns than the safe project. Dynasties whose initial productive technology is $h_t < \widehat{h}_B$, are sufficiently concerned, however, by the possibility of falling below their aspiration level and hence invest in the safe project. It follows that dynasties whose initial productive technology is $\widehat{h}_{x^*} \leq h_t < \widehat{h}_B$ will converge to the mid-level steady-state h_M^*

Finally, if an individual has initial productive technology $h_t \geq \widehat{h}_B$, then they and their future generations will always invest in the opportunity-driven project. Consequently, these dynasties will converge to a high-level steady state h_H^*. This is not to say that some generations will not fall into poverty during a bad productivity shock. The level of knowledge, however, they pass on, is not affected by this bad productivity shock and so will not affect the upward trajectory of their dynasties.

From equations (11) and (15) it can be shown that $\widehat{h}_b\ (a, \lambda) < 0$ and $\widehat{h}_B(a, \lambda) > 0$. Hence, increasing the level of risk (a) or the strength of aspirations (λ) moves $\widehat{h}_b$ to the left and $\widehat{h}_B$ to the right in Figure 1.

[7] One could view this model as either understanding the emergence of inequality across economies (as this analysis does), or the long-run persistence of inequality within an economy. The transitional dynamics depend on the initial level of knowledge for the former and on the initial distribution of knowledge within an economy for the latter.

2.7 Discussion

One of the innovations of this model is that poverty traps can arise purely as a result of the nature of preferences, rather than the structure of technologies, or functioning of markets. The resulting equilibria are also reminiscent of Banerjee's (2000) two types of poverty. Those with initial wealth sufficiently below the poverty line $\widehat{h}_{x^*}$ are experiencing poverty of desperation. Those with initial wealth just above $\widehat{h}_{x^*}$ are concerned about falling into poverty and hence will not invest in risky projects. This can be thought of as experiencing poverty of vulnerability.

The analysis of the model has so far concentrated on circumstances where aspiration levels enter an agent's investment decision. If, however, aspirations are too high for the necessity-driven project, where the best outcome of the project would never satisfy the agent's aspiration level, $\beta h_t + b(1+a) - (1+r)k < x^*$, individuals would simply always invest in the safe project. These agents will always suffer the disutility of being below their aspiration level. Similarly, if aspirations were too low for the opportunity-driven project, then the worst outcome of the project would not take them below their aspiration level, $\beta h_t + B(1-a) - (1+r)k > x^*$. These individuals would never experience the possibility of falling below their aspiration level and therefore always invest in the opportunity-driven project. Under these conditions, a policy that lowers aspirations that are too high may encourage individuals into a wealth-enhancing investment, such as in Dalton et al. (2016). In general, individuals with high aspirations must not only have high aspirations, but must also be sufficiently induced to act in order to achieve those aspirations. Hence, the strength of our aspirations (how much we care about whether we see our aspirations succeed or fail) as well as the level of aspiration (if our aspirations are too high we may not be sufficiently motivated to act on them) are important for the development process.

Finally, if the assumption that poor individuals do not have access to the opportunity-driven project is relaxed, then there will only be two steady states, h_M^* and h_H^*. This is because individuals below the poverty line $\widehat{h}_{x^*}$ will always invest in the opportunity-driven project in order to escape poverty. Over generations, poor individuals will escape poverty and converge to the mid-level steady-state h_M^*. One of the reasons for implementing this assumption is to show that sufficiently poor individuals would invest in risky investments, even if the average returns of the investment are less than the safe project. In essence, they act as if they are risk seeking as they have "nothing left to lose". If this assumption is removed, however, one can also think of other reasons why poor individuals are less likely to invest in an opportunity-driven project, and more likely to invest in a necessity-driven project. These

reasons are explored in the next section.

3 Empirical Evidence

The model outlined above demonstrates how aspiration levels are important from a development perspective, as wealth-enhancing investments are often risky. The most obvious example of a wealth-enhancing investment that entails a substantive amount of risk is entrepreneurship. This is shown by the fact that the spread of income earnings is much larger for entrepreneurs than workers (see Hamilton, 2000; Lin et al., 2000). Furthermore, the probability of a business failing is much higher than being laid off from a job.[8]

The importance of entrepreneurship as a source of innovation and growth dates back to Schumpeter (1911). A simple plot (shown in Figure 2) of the percentage of entrepreneurs within a country on a country's level of development, however, shows a seemingly counter-intuitive relationship.[9]

[Figure 2 about here]

One of the reasons for this inverse relationship between entrepreneurship and development is due to problems in measuring what constitutes an entrepreneur. One can split the motivations for entrepreneurship into two types: opportunity-driven and necessity-driven (see Lunati, 2010). Opportunity-driven entrepreneurs are more likely to start frims that are more profitable, innovative and grow, compared to necessity-driven entrepreneurs. This is because opportunity-driven entrepreneurs choose to take advantage of a business venture, whereas necessity-driven entrepreneurs, start a firm because they have no other means of income (through paid employment, for example). These two types of entrepreneurs have different aspirations for their firms. Opportunity-driven entrepreneurs aspire to improve their current situation and can therefore aspire for success. Necessity-driven entrepreneurs feel they have no other option but to enter entrepreneurship and aspire to escape their current situation.

[8] In the US for example, the Small Business Association (2016) report a 78.5% chance of a firm surviving past their first year, compared to a 1% probability of being laid off (Bureau of Labor Statistics, 2016).

[9] Due to data availability, I use average rates of nascent entrepreneurs by country, across the period 2001-2010, from GEM survey data, and use average GDP per capita from the World Bank. Wennekers et al. (2005) finds a more intuitive U-shaped relationship between entrepreneurship and development, using a sample of 36 countries, within the GEM survey, in 2005. However, the upturn in entrepreneurial rates after a certain level of development is relatively small.

In order to understand what drives the aspirations of these two types of entrepreneurs, I take advantage of a unique data set, the Global Entrepreneurship Monitor survey (GEM). The GEM survey has detailed information on start-up activities across a large number of individuals and spanning a wide variety of countries. The sample I use contains 44466 individual observations, within 86 different countries, over a 10 year period (see Table 3 in the Appendix for the list of countries in the sample). One of the main advantages of the GEM survey is that it asks individuals their motivation in starting a business, and catches individuals at the start of the entrepreneurial process. I code individuals who report being in the process of starting a business due to "taking advantage of a business opportunity" as opportunity-driven, whereas those reporting starting a business due to a "lack of a better alternative", I code as necessity-driven. If I now plot the proportion of entrepreneurs that report being opportunity-driven on development (Figure 3) we see a positive relationship.[10]

[Figure 3 about here]

One of the implications of the model, outlined in Section 2, is that those sufficiently above their aspiration level will take on an opportunity-driven project to aspire for success, and those individuals sufficiently below their aspiration level will take on a necessity-driven project and aspire to escape poverty. One way of testing this implication is considering the effect of an individual's income level on their motivation for starting a firm. If an entrepreneur has a high income level, they would be less worried about falling into poverty, and therefore would be more likely to only take on opportunity-driven investments. If, however, an individual has a low income, they would arguably be more concerned about falling into poverty or escaping poverty. Therefore, low-income entrepreneurs are more likely to have a necessity driven motive. As a consequence, I test the hypothesis that the higher the entrepreneur's income, controlling for other factors, the more likely they are to be opportunity-driven, and the less likely they are to be necessity-driven.

The GEM survey reports income entrepreneurs surveyed in three categories: low, medium and high, with respect to the distribution of the country in which they are surveyed. The income variable, therefore, captures aspirations to avoid relative poverty within a country, as opposed to relative poverty across countries or absolute poverty. To isolate the effects of income

[10] Simiarly, Ács and Varga (2005) find opportunity-driven entrepreneurship has a positive effect on development whereas necessity-driven entrepreneurship has no effect.

on entrepreneurial motivation I control for a number of factors reported in Table 1.

[Table 1 about here]

I add dummy variables for the level of education obtained, as well as for age categories. This is because human capital and experience are likely to increase idea creation, which may lead to opportunity-driven entrepreneurship. Furthermore, those with high levels of human capital and experience may have better employment opportunities, which would reduce the chance of becoming a necessity entrepreneur. The employment status of individuals will be of particular importance for the motivations of starting a firm, especially whether an individual is unemployed. I also control for whether an individual answered "yes" or "no" to the statement "you have the knowledge, skill and experience required" to become an entrepreneur. This can be thought of as a control for previous business experience or entrepreneur's confidence in their own ability.

I include all individuals that are in the process of the starting a firm (nascent entrepreneurs) between the ages of 18-65. Although I use individual level data, the survey does not track individuals over time. One drawback of this is that it is impossible to check for consistency of answers. For example, if individuals change their mind about the motivation for starting their business. Finally, I use country and time fixed effects to control for any macroeconomic effects which may influence an individual's motivations for starting a firm.

It follows that the linear probability model is expressed as

$$Motivation_{ij,t} = a_j + \delta_t + X'_{ij,t}\beta + \gamma Income_{ij,t} + \varepsilon_{ij,t}$$

where $Motivation_{ij,t}$ is the dependent binary variable (either opportunity-driven or necessity-driven) at time, t, for an individual, i, within a country j. The independent variable of interest is denoted by $\gamma Income_{ij,t}$, a_j denotes country fixed effects, δ_t year fixed effects, and $X'_{ij,t}\beta$ is a vector of control variables for education, employment, perceived experience and age.

3.1 Results

Table 2 reports the results of the empirical analysis. The first and second columns show the results of the linear probability model when the dependent variable is opportunity-driven and necessity-driven, respectively. Given the binary nature of the dependent variable, it is not surprising that most of the results are inversely related. I report both, however, for convenience purposes.

[Table 2 about here]

The results suggest entrepreneurs are more likely to report their motivation for starting a firm is opportunity driven when income is larger. Compared to poor-income entrepreneurs, having a medium-level income increases the probability of being opportunity driven by 0.049, and having high-level income increases the probability by 0.119. In regards to the other variables, education increases the likelihood of reporting being an opportunity-driven entrepreneur at each level of education. These results are in line with expectations about human capital having a positive effect on innovation and employment opportunities. Being unemployed lowers the probability of being an opportunity-driven entrepreneur by -0.111 compared to a full-time employed individual. This result is unsurprising given that entrepreneurship is often used as a necessary route to escape unemployment. Perceived entrepreneurial skill increases the likelihood of an opportunity-driven motivation by 0.058. Whether this is interpreted as self-confidence and/or actual entrepreneurial experience, it is in line with expected positive effects of confidence and experience needed for opportunity-driven entrepreneurship. Compared to 18-24 year olds, the effect of age decreases the probability of becoming an opportunity-driven entrepreneur, at each age interval. One may find these results surprising as older individuals have more experience and have a longer time to amass funds for investment. However, this result could be due to individuals accruing experience in their career as an employee. This would subsequently reduce the incentive to switch to opportunity-driven entrepreneurship as earnings from paid employment are likely to increase with experience.

There may be a significant difference between nascent entrepreneurs and more established entrepreneurs. Nascent entrepreneurs include all individuals who engage with the entrepreneurial process. Established entrepreneurs, however, only include entrepreneurs who are successful or who are more willing to continue with their project. As a robustness check, I repeat the analysis for individuals who report being owners of an established firm, as opposed to those in the early process of entrepreneurship. The results are given in Table 4 in the Appendix and are similar in both size and effect. The only major difference being whether an individual reports they are unemployed becomes insignificant for necessity entrepreneurs. This is to be expected, however, as most owners would categorise themselves as employed when surveyed.

4 Conclusions

This paper has sought to highlight the effects of individual aspirations on the development process. It is common to associate aspirations with success and achievement. The contribution of this paper is to show that the effect of aspirations, however, will be different depending on the circumstances an individual faces. The model developed within this paper suggests that when individuals share a common aspiration level, to be free from poverty, for example, two different types of poverty traps occur. Individuals above the poverty line may be sufficiently concerned about falling into poverty that they decline investment in wealth-enhancing, risky projects. These individuals invest in safe projects to survive. If individuals are below the poverty line, their aspiration to escape poverty may be so strong that they are willing to invest in risky projects, even if this risky project yields lower returns on average than a less risky alternative.

One conclusion from this model is that those who invest in risky projects, and who do not fear falling into poverty, are opportunity driven. Alternatively, those who invest in risky projects who feel they have no other choice, whether to escape poverty, or because they have no other means of income, are necessity driven. As a consequence I test this implication using individual level, cross-county data. The subsequent findings suggest the probability of an entrepreneur being opportunity-driven, compared to poor individuals, increases by 0.049 for mid-level income individuals, and 0.119 for high-level income individuals.

One possible extension of this model is to examine the effects of social insurance on development. In the model described above, a social insurance scheme, which prevents individuals falling below the poverty line, could eliminate both poverty traps: individuals, therefore, could no longer be in poverty, or be concerned about falling into poverty. How this social insurance scheme is funded, however, may reduce incentives for individuals to invest in risky, wealth-enhancing projects. This, however, rests on the assumption that our common aspiration level is fixed, such as the aspiration to avoid absolute poverty. If our common aspiration level is to avoid relative poverty, however, this would have implications for the distribution of earnings.

Appendix

[Table 3 about here]

[Table 4 about here]

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Figures and Tables

Figure 1

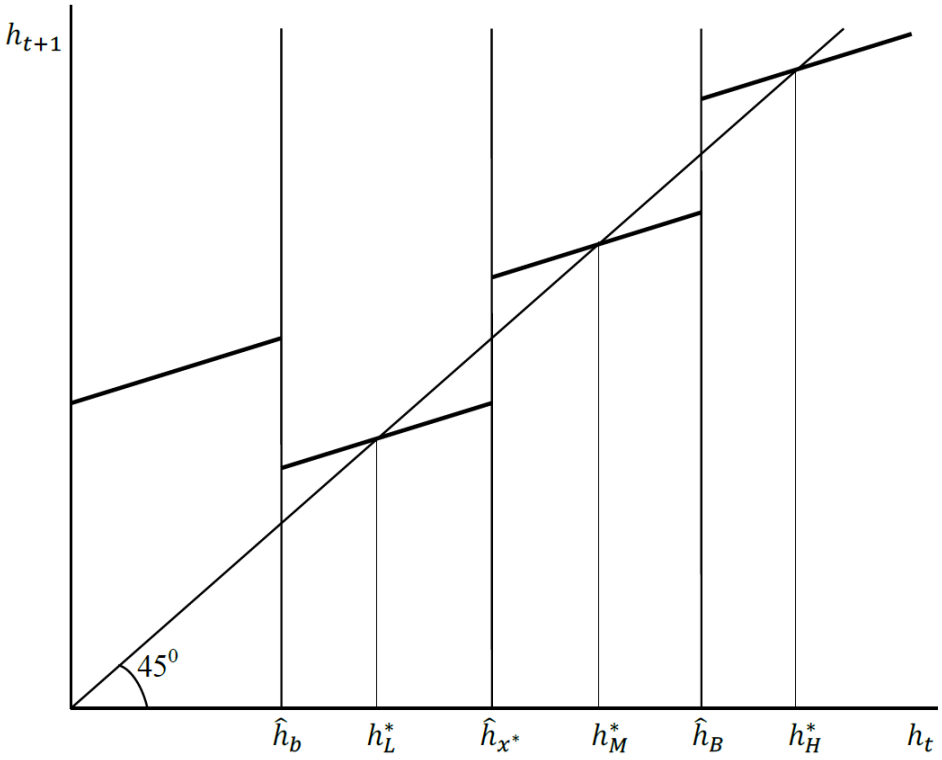


Figure 2

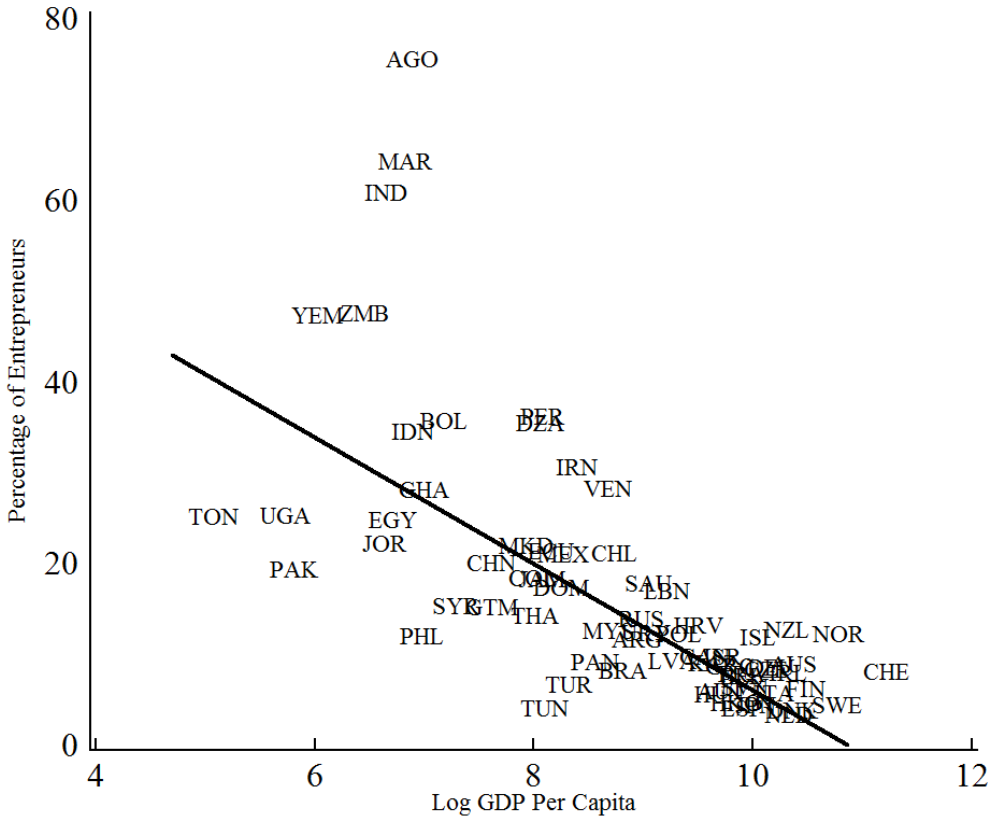
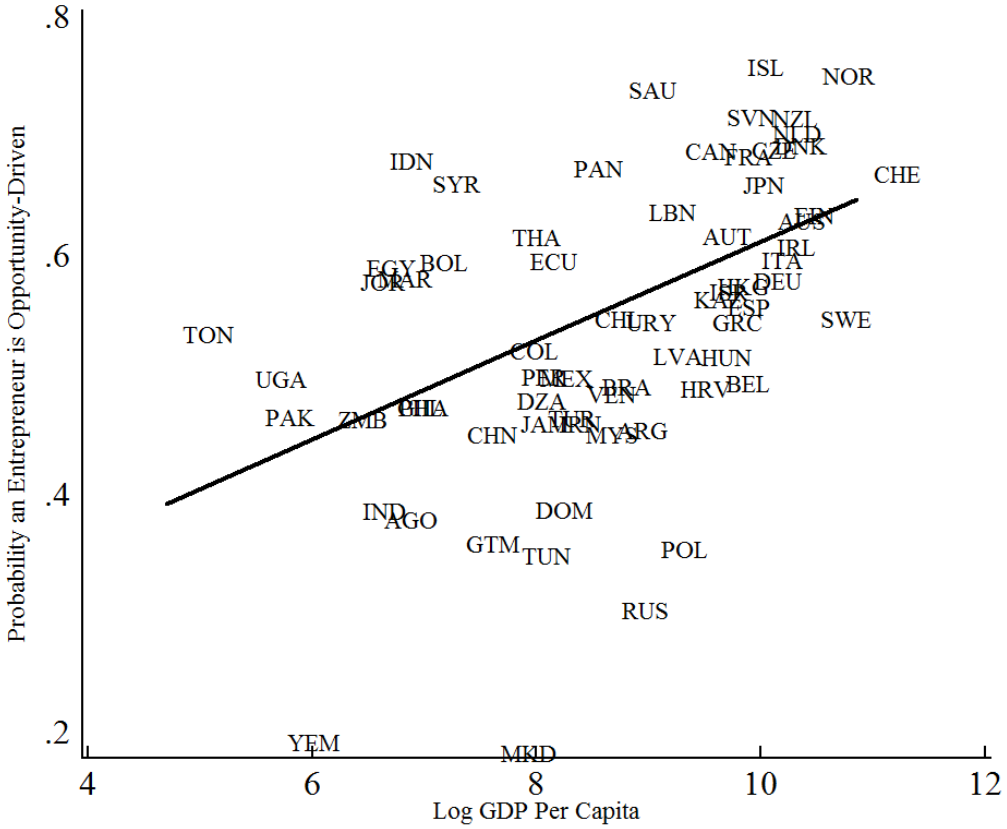

Percentage of Entrepreneurs
Log GDP Per Capita
0
20
40
60
80
4
6
8
10
12
AGO
MAR
IND
YEM
ZMB
BOL
IDN
IRN
VEN
GHA
TON
UGA
EGY
JOR
PAK
CHL
SAU
LBN
THA
PHL
ISL
NZL
NOR
CHE
TUR
TUN
SWE

Figure 3


.8
.6
.4
.2
Probability an Entrepreneur is Opportunity-Driven
4
6
8
10
12
Log GDP Per Capita
ISL
NOR
SAU
SVN
NZL
NLD
DNK
CAN
FRA
CHE
IDN
SYR
PAN
JPN
LBN
AUS
FIN
THA
AUT
IRL
ECU
BOL
ITA
DEU
HKG
ESP
GRC
SWE
TON
URY
COL
LVA
HUN
UGA
MEX
BRA
HRV
BEL
VEN
DZA
PAK
ZMB
CHN
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IND
AGO
DOM
GTM
TUN
POL
RUS
YEM
MKD

Table 1: Summary Statistics

Variable Category	**Variable**	**Mean**	**S.D.**
Nascant Entrepreneur	*Opportunity Driven*	0.541	0.498
	Necessity Driven	0.216	0.412
Established Entrepreneur	*Opportunity Driven*	0.478	0.500
	Necessity Driven	0.270	0.444
Income	*Poor Income*	0.323	0.468
	Middle Income	0.351	0.477
	High Income	0.327	0.469
Education	*No School*	0.035	0.184
	Some Secondary	0.281	0.450
	Secondary	0.316	0.465
	Post Secondary	0.239	0.426
	Grad Experience	0.129	0.336
Employment	*Employed*	0.461	0.499
	Unemployed	0.073	0.260
	Part-time	0.073	0.259
	Retired/Disabled	0.065	0.246
	Homemaker	0.092	0.288
	Student	0.05	0.218
Perceived Experience	*Entrep. Skill*	0.486	0.500
Age	*18-24 year olds*	0.138	0.345
	25-34 year olds	0.213	0.409
	35-44 year olds	0.244	0.430
	45-54 year olds	0.221	0.415
	55-64 year olds	0.183	0.387

Table 2: Regression Results - Nascent Entrepreneurs

		FE	
		Opportunity Driven	***Necessity Driven***
Income	*Middle Income*	0.049***	-0.047***
		(0.012)	(0.010)
	High Income	0.119***	-0.112***
		(0.018)	(0.014)
Education	*Some Secondary*	0.006	-0.033
		(0.022)	(0.023)
	Secondary	0.043*	-0.077***
		(0.022)	(0.021)
	Post Secondary	0.075***	-0.126***
		(0.023)	(0.024)
	Grad Experience	0.111***	-0.142***
		(0.030)	(0.027)
Employment	*Unemployed*	-0.111***	0.129***
		(0.021)	(0.019)
	Part-time	-0.011	0.006
		(0.011)	(0.008)
	Retired/Disabled	-0.040**	0.036**
		(0.018)	(0.016)
	Homemaker	-0.056***	0.088***
		(0.017)	(0.015)
	Student	0.042***	-0.019
		(0.014)	(0.013)
Percieved Experience	*Entrep. Skill*	0.058***	-0.041***
		(0.010)	(0.007)
Age	*25-34 year olds*	-0.036***	0.017**
		(0.009)	(0.008)
	35-44 year olds	-0.067***	0.038***
		(0.010)	(0.011)
	45-54 year olds	-0.098***	0.060***
		(0.013)	(0.012)
	55-64 year olds	-0.096***	0.058***
		(0.016)	(0.015)
	Constant	0.404***	0.379***
		(0.026)	(0.029)
Year Dummies		Yes	Yes
County F.E.		Yes	Yes
Observations		44466	44466
Number of Countries		86	86

Notes: Robust standard errors are reported in parentheses.
*Significance levels:***p <0.01; **p <0.05; *p <0.1.*
Low Income, Full Time, No Secondary and 18-24 year olds were dropped from Income, Employment, Education and Age respectively, due to multicollinearity.

Table 3: Countries

Sample Countries				
Algeria	Costa Rica	Iran	New Zealand	Switzerland
Angola	Croatia	Ireland	Nigeria	Syria
Argentina	Czech Republic	Israel	Norway	Thailand
Australia	Denmark	Italy	Pakistan	Tonga
Austria	Dominican Republic	Jamaica	Panama	Trinidad and Tobago
Bangladesh	Ecuador	Japan	Peru	Tunisia
Barbados	Egypt	Jordan	Philippines	Turkey
Belgium	El Salvador	Kazakhstan	Poland	Uganda
Belize	Estonia	Latvia	Portugal	United Kingdom
Bolivia	Finland	Lebanon	Qatar	United States
Bosnia and Herzegovina	France	Libya	Russia	Uruguay
Botswana	Germany	Lithuania	Saudi Arabia	Venezuela
Brazil	Ghana	Luxembourg	Senegal	Vietnam
Bulgaria	Greece	Macedonia	Slovakia	Yemen
Burkina Faso	Guatemala	Malawi	Slovenia	Zambia
Cameroon	Hong Kong	Malaysia	South Africa	
Canada	Hungary	Mexico	South Korea	
Chile	Iceland	Morocco	Spain	
China	India	Namibia	Suriname	
Colombia	Indonesia	Netherlands	Sweden	

Table 4: Regression Results - Established Entrepreneurs

		FE	
		Opportunity Driven	***Necessity Driven***
Income	*Middle Income*	0.054***	-0.080***
		(0.012)	(0.011)
	High Income	0.134***	-0.156***
		(0.015)	(0.016)
Education	*Some Secondary*	-0.004	-0.031**
		(0.013)	(0.014)
	Secondary	0.051***	-0.092***
		(0.014)	(0.012)
	Post Secondary	0.081***	-0.141***
		(0.017)	(0.015)
	Grad Experience	0.115***	-0.157***
		(0.022)	(0.018)
Employment	*Unemployed*	-0.049*	0.033
		(0.029)	(0.030)
	Part-time	-0.017**	-0.008
		(0.007)	(0.009)
	Retired/Disabled	0.012	-0.057***
		(0.020)	(0.019)
	Homemaker	-0.038***	0.042***
		(0.013)	(0.015)
	Student	0.047**	-0.102***
		(0.022)	(0.018)
Percieved Experience	*Entrep. Skill*	0.086***	-0.070***
		(0.010)	(0.007)
Age	*25-34 year olds*	-0.035***	-0.002
		(0.012)	(0.010)
	35-44 year olds	-0.064***	0.025**
		(0.013)	(0.010)
	45-54 year olds	-0.096***	0.053***
		(0.014)	(0.012)
	55-64 year olds	-0.111***	0.056***
		(0.014)	(0.013)
	Constant	0.314***	0.533***
		(0.027)	(0.020)
Year Dummies		Yes	Yes
County F.E.		Yes	Yes
Observations		92830	92830
Number of Countries		86	86

Notes: Robust standard errors are reported in parentheses.
*Significance levels:***p <0.01; **p <0.05; *p <0.1.*
Low Income, Full Time, No Secondary and 18-24 year olds were dropped from Income, Employment, Education and Age respectively, due to multicollinearity.